CLAIMS

What is claimed is:

1. A process for preparation of a coating, coated substrate, film or sheet, in which process a coating mixture comprising a reactive system of a polyisocyanate-functional, polyketone-functional, polyepoxide-functional, polyanhydride-functional and/or polycyclic carbonate-functional compound or polymer and a dispersion or fine powder of a compound containing a reactive hydrogen, which mixture is not or low-reactive at room temperature, is applied onto a substrate at ambient temperature, resulting in a substrate coated with the coating mixture, followed by reacting the compounds mentioned above by elevating the temperature, wherein the reaction temperature, which is 50 to 300°C and is maintained for 1 to 20 minutes without selected additives, is adjusted to a temperature which is 3-50°C higher or lower than said temperature in a similar reaction time by addition of an additive to the coating mixture, prior to elevating the temperature or to one of the reactants of the coating mixture prior to the mixing with the other component.

2. A process according to claim 1, wherein the compound containing the reactive hydrogen is a compound which is crystalline at a temperature below 90°C.

3. A process according to claim 1, wherein the compound containing a reactive hydrogen is a polyhydrazide and/or or polysemicarbazide and is preferably adipic dihydrazine or carbodihydrazide.

4. A process according to claim 1, wherein the additive is water, acid, base, a metal catalyst, a solvent, a polyisocyanate-functional compound, a polyketone-functional compound, a melamine and/or a surfactant.

5. A process according to claim 1, wherein concentration, temperature, sequence of the addition of additives, separate, prior addition of the additives to one of the reactants of the coating mixture, and/or equilibration time of the additives in the coating mixture or in one of the reactants of the coating mixture are factors that control the reaction.

6. A process according to claim 1, wherein reaction rate is increased by addition of water, an acid, a base, or a metal catalyst, together with a surfactant, to the coating mixture, and a coating is formed at a temperature which is 3-50°C below the original temperature.

7. A process according to claim 1, wherein the reaction is delayed by addition of 0.0001-10 weight % of water and/or acid, amine, polyamine, alcohol or polyol to a dispersion of the compound containing a reactive hydrogen prior to mixing it with the polyisocyanate-functional compound, and a coating is formed at a temperature that is 3-50°C higher than the original temperature.

8. A process according to claim 1, wherein the reaction is delayed by addition of 0.002-0.20 equivalents of a polyisocyanate-functional compound, such as 1,6-hexanediisocyanate, tuluenediisocyanate, 4,4'-diisocyanatocyclyohexylmethane, 4,4'-diisocyanatophenylmethane, 3-isocyanatomethyl-3,5,5,-trimethylcyclohexylisocyanate, tetramethylxylenediisocyanate, a (triisocyanatoalkyl- or cycloalkyl)-isocyanurate, a diisocyanato-alkyl- or cycloalkyl) uretdion or a isocyanate-functional polyurethane based on said diisocyanates, and/or an alphatic or aromatic polycarbodiimide and/or an organic solvent, to a dispersion of the compound containing a reactive hydrogen prior to the mixing with a polyisocyanate-functional compound, and a coating is formed at a temperature that is 3-50°C higher than the original temperature.

9. A process according to claim 8, wherein the reaction is delayed by addition of 0.002-0.20 equivalents a polyisocyanate-functional compound with a low molecular weight to an isocyanate-functional polymer prior to mixing with the compound containing a reactive hydrogen, and a coating is formed at a temperature of 3-30°C higher than the original temperature.

10. A process according to claim 1, wherein the reaction is delayed by addition of 0.001-0.20 equivalent of an aldehyde, polyaldehyde, ketone- and or polyketone-functional compound to a dispersion of the compound containing a reactive hydrogen prior to the mixing with a polyisocyanate-functional compound, and a coating is formed at a reaction temperature which is 3-50°C higher than the original reaction temperature.

11. A process according to claim 1, wherein pot-life of coating mixtures is increased from 5-240 minutes up to at least 1 day.

12. A process according to claim 1, wherein a second reactive system is present and both systems are essentially reacted as a sequential two step reaction wherein between these reactions the coating is remoulded, wherein the second reactive system comprises on the one hand a ketone, anhydride, epoxide, a polyisocyanate with a different reactivity, a blocked isocyanate and/or a cyclic carbonate function, or the compound with the isocyanate functionality from claim 1, and on the other hand a hydrazide or semicarbazide with a lower reactivity or with a different size, an amine, a hindered amine, chlorinated amine, a polymer protected amine, blocked amine, azetidine, aspartate, carboxyl, aromatic amine, hydroxide and/or melamine function and/or that the other reactive system comprises polysiloxane or melamine functions which are polymerisable by self-condensation, and/or that the other reactive system comprises an unsaturated compound which undergoes an addition polymerization, in which the reactive groups from the second reactive system may be coupled to the compound containing a reactive hydrogen, or to the polyisocyanate-,polyketone-, polyepoxide, polyanhydride, and/or a polycyclic carbonate-functional compound or polymer of the first reactive system or to another compound.

13. A process according to claim 12, wherein the second reactive system reacts faster than the first reactive system in the presence of the additive.

14. A process according to claim 12, wherein the second reactive system reacts more slowly than the first reactive system in the presence of the additive.

15. A process according to claim 11, wherein the pot-life is increased up to at least 14 days.

16. Coating, coated substrate, film or sheet obtained by the process according to claim 1.